



Tropentag, September 18-20, 2019, Kassel

“Filling gaps and removing traps  
for sustainable resource management”

## Inga and Camëntsá Ecosystem Services from Agroforestry Systems in the Sibundoy Valley, Colombia

VANDREÉ JULIÁN PALACIOS BUCHELI<sup>1,2</sup>, WOLFGANG BOKELMANN<sup>2</sup>

<sup>1</sup>*Universidad de Ciencias Aplicadas y Ambientales, Colombia*

<sup>2</sup>*Humboldt University of Berlin, Faculty of Life Sciences, Germany*

### Abstract

Agroforestry systems play an essential role in the livelihoods and food security of the Inga and Camëntsá indigenous communities, as they supply provisioning, regulating and habitat, and cultural ecosystem services.. The agrosilvopastoral agroforestry system is of utmost importance for the development of the communities' culture. Nevertheless, the home garden is shrinking in size and gradually disappearing. The purpose of this research relates to economically valuing ecosystem services provided by agroforestry. Research for this study was conducted in five indigenous settlements of the San Francisco municipality. A census was carried out to determine the population (146 households), and a stratified random sample was used for the survey with a sample size of 67 households (45.8%). Information required for the assessment is comprised of three data sets obtained from (i) cost-benefit analysis, (ii) contingent valuation, and (iii) travel cost analysis. Silvopastoral systems represent the highest economic value (965,800.81 € year<sup>-1</sup>) despite its low value per hectare (4,601.24 € ha<sup>-1</sup> year<sup>-1</sup>). The low value per unit of land becomes relevant when it is aggregated to the total silvopastoral land area, which occupies the most extensive coverage (209.9 ha). Conversely, agrosilvopastoral systems have the highest value per hectare (7,607.41 € ha<sup>-1</sup> year<sup>-1</sup>), but the total value (518,825.05 € year<sup>-1</sup>) position them as second in the list when aggregated to total land area (68.2 ha). Similarly, the agrisilvicultural system has a high value per unit of land (5,722.54 € ha<sup>-1</sup> year<sup>-1</sup>), which is explained by the high value of output and input (2,239.7 € ha<sup>-1</sup> year<sup>-1</sup>) produced and demanded but it covers the smallest area (35.2 ha). The total economic contingent value adds up to 2,834.2 € ha<sup>-1</sup> year<sup>-1</sup>, which pertains to each hectare of agroforestry systems. Most of the families (88%) were willing to protect home gardens. The total protected area adds up to around 71.7 ha, and the minimum monetary offset that households would be willing to receive per month is € 31.6, and the maximum is € 1,581.7. The economic valuation based on travel cost analysis shows a total value of around 648.4 € ha<sup>-1</sup> year<sup>-1</sup>.

**Keywords:** Agrisilvicultura, agrosilvopastoral, contingent valuation, indigenous communities, silvopastoral